Noise suppression system for a permanent-magnet motor for activating a functional device in a motor vehicle

The present invention relates to a noise suppression system for a permanent-magnet motor for activating a functional device in a motor vehicle.

In general, such motors include supply brushes associated with a commutator and connected to an external power supply by supply leads.

In addition, such motors also generally include a metal casing.

A certain number of noise suppression systems for these motors have already been developed in the prior art.

However, all these systems have proved to be relatively ineffective or to have too high a manufacturing cost for a general application to this type of motor.

The object of the invention is therefore to solve these problems.

For this purpose, the subject of the invention is a noise suppression system for a permanent-magnet motor for activating a functional device in a motor vehicle, in which the motor includes supply brushes connected to an external power supply by leads and a metal casing, characterized in that each brush is connected to the metal casing of the motor through at least one noise suppression capacitor, in that the metal casing of the motor is connected to the vehicle's earth and in that the metal casing of the motor and the functional device have complementary means for earthing the casing.

The invention will be more clearly understood with the aid of the description which follows, given solely by way of example and with reference to the appended drawing, which shows a schematic diagram illustrating the general structure of a noise

suppression system for a permanent-magnet motor according to the invention.

This figure shows the general structure of a permanent-magnet motor for activating, for example, a functional device in a motor vehicle, this motor being denoted by the general reference number 1.

This motor has, for example, a metal casing denoted by the general reference number 2, in which, for example, permanent magnets denoted by the general reference number 3 and a rotating part denoted by the general reference number 4 are placed, the said rotating part being provided with a shaft 5 on which, for example, a commutator denoted by the general reference number 6 and other devices of conventional type, denoted by the general reference number 7, are placed.

The commutator 6 is associated with supply brushes, for example 8 and 9, which are connected by supply leads, for example 10 and 11, to a power supply external to the motor, denoted by the general reference number 12 in this figure.

According to the invention, each supply brush, that is to say the brushes 8 and 9, is connected to the metal casing 2 of the motor through at least one noise suppression capacitor, such as the capacitors 13 and 14, and the metal casing 2 of the motor is connected to the vehicle's earth, for example at 15, in any suitable manner, as will be described in greater detail below.

In fact, this makes it possible to form two noise suppression circuits essentially of the LC type on the brushes, in so far as the leads 10 and 11 have a certain intrinsic inductance.

These leads may also be associated with specific inductors, such as the inductors denoted by the general reference numbers 16 and 17 in this figure, or they may consist of ferrite-loaded wires of conventional type, that is to say in which the conducting core of these wires is placed in a ferrite

sheath which is itself surrounded by a layer of insulating material.

Such a structure therefore makes it possible to match the characteristics of the LC circuits to the desired noise suppression characteristics.

The metal casing 2 of the motor may, as described above, be connected to the vehicle's earth in any suitable manner.

Thus, for example, this casing may be connected to the vehicle's earth through an earthing braid or a supporting piece of the functional device with which the motor is associated, etc.

Thus, for example, the metal casing of the motor may be earthed by a piece for fastening this motor to the rest of the functional device.

For example, if the activating motor is a motor for activating a so-called motor-operated adjustable seat of a motor vehicle, the metal casing of the motor may be connected to the vehicle's earth through the slideway of the seat or other device.

It is thus understood that such a structure then has a certain of advantages, especially with regard to its simplicity and therefore its production cost.